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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/529,811

09/27/2005

Serge Dutheil

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WESTMAN CHAMPLIN & KELLY, P.A.  
SUITE 1400  
900 SECOND AVENUE SOUTH  
MINNEAPOLIS, MN 55402-3244

EXAMINER

MEHTA, MEGHA S

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/529,811	<b>Applicant(s)</b> DUTHEIL, SERGE	
	<b>Examiner</b> MEGHA MEHTA	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 1-14 and 24-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/27/2005</u> .   | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-14, drawn to a method for reshaping conductive elements.

Group II, claim(s) 15-23, drawn to a device used to reshape conductive elements.

Group III, claim(s) 24-26, drawn to a method for producing a module.

2. The inventions listed as Groups I-III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The question of unity of the invention has been reconsidered retroactively by the examiner in view of the search performed; a review of US 6,660,944 Murata et al., also published as JP 10013007 Murata et al, makes clear that the inventions of the groups I-III lack the same or corresponding special technical feature because the cited reference appears to demonstrate that the claimed technical feature does not define a contribution which each of the inventions, considered as a whole, makes over the prior art. Accordingly, the prior art of the record supports restriction of the claimed subject matter in to the groups as mentioned immediately above because unity of invention is lacking for the following reasons:

Groups I and II: The shared features are 1) a set of conductive elements distributed on the bottom surface of an electronic module, said set of conductive elements forming means to transfer the module onto a motherboard and/or electromagnetic shielding means for the bottom surface of the module and/or electrical interconnection means with the motherboard and 2) reshaping the set of conductive elements. Murata teaches conductive elements in the form of solder balls on an electronic module that can be used to transfer the module onto a motherboard, and reshaping the solder balls in column 3, lines 5-10.

Groups I and III: The shared features are 1) a set of conductive elements distributed on the bottom surface of an electronic module, said set of conductive elements forming means to transfer the module onto a motherboard and/or electromagnetic shielding means for the bottom surface of the module and/or electrical interconnection means with the motherboard. Murata teaches conductive elements in the form of solder balls on an electronic module that can be used to transfer the module onto a motherboard in column 3, lines 5-10.

Groups II and III: The shared features are 1) a set of conductive elements distributed on the bottom surface of an electronic module, said set of conductive elements forming means to transfer the module onto a motherboard and/or electromagnetic shielding means for the bottom surface of the module and/or electrical interconnection means with the motherboard and 2) reshaping the set of conductive elements. Murata teaches conductive elements in the form of solder balls on an electronic module that can be used to transfer the module onto a motherboard, and reshaping the solder balls in column 3, lines 5-10.

3. Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse.

4. The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained.

Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be

amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

***Priority***

5. Receipt is acknowledged of PCT priority documents submitted with WIPO.

***Information Disclosure Statement***

6. The information disclosure statement (IDS) was submitted on 9/27/2005. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the IDS is being considered by the examiner. Please refer to the applicant's copy of the 1449 submitted herewith.

***Drawings***

7. The drawings are objected to under 37 CFR 1.83(a) because they fail to show soldering paste **26** as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the

renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

8. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "24" in figure 2 and "33" in figure 3 have both been used to designate conductive elements, but refer to different elements of otherwise similar drawings. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

9. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "43" has been used to designate both conductive elements and nuts. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application

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must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

10. Figures 1, 2 and 3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

11. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 19 and 20-21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Applicant sets forth "cooling means" and "temperature profile application means" in the claims but these means are not adequately described in the specification. Therefore, one of



ordinary skill in the art cannot determine the corresponding structure, material or acts and equivalents thereof.

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

13. Claims 16-17, 19, 20-21 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

14. As to claims 19 and 20-21, the specification does not disclose adequate structure, materials or acts for the "cooling means" or "temperature profile application means" recited in the claims and therefore one of ordinary skill in the art cannot ascertain the metes and bounds of the claims. For the purpose of examination, the "cooling means" will be interpreted to mean any cooling means available to one of ordinary skill in the art such as air cooling, quenching or using a cooling gas. The "temperature profile application means" recited in claim 20 will be interpreted to mean that the substrate may be deformable upon reaching a certain temperature. The "temperature profile application means" recited in claim 21 will be interpreted to mean that the solder will melt upon reaching a certain temperature in order to reflow and release stress.

15. Claims 16, 17 and 23 recite the limitations "the first wall" and "the back-plate positioning means" in the second and first lines, respectively. There is insufficient antecedent basis for these limitations in the claims.

#### ***Claim Interpretation***

16. A claim limitation invokes 35 U.S.C. 112, 6<sup>th</sup> paragraph only if the following three part analysis is met. 1) The claim limitation must use the phrase "means for" or "step for"; 2) the

"means for" or "step for" must be modified by functional language; and 3) the phrase "means for" or "step for" must not be modified by sufficient structure, material or acts for achieving the specified function. See MPEP section 2181.

In claim 15, line 2, "means to transfer" does not meet the three-prong test because it is modified by sufficient structure detailing what the means are. In this case, the means are the conductive elements. Therefore, 112 6<sup>th</sup> paragraph will not be invoked.

In claim 15, line 3, "shielding means" does not meet the three-prong test because it is modified by sufficient structure. Therefore, 112 6<sup>th</sup> paragraph will not be invoked.

In claim 15, lines 5-6, "means to enable stress release" does not meet the test because it is modified by sufficient structure and acts. Therefore, 112 6<sup>th</sup> paragraph will not be invoked.

Claims 18 and 19, line 2 in both, "module stress reflow means" does not invoke 112, 6<sup>th</sup> paragraph because the means are modified by sufficient structure such as a plate, back-plate, furnace, cooling means and a means to release.

Claim 19, line 4, "means to release" does invoke 112, 6<sup>th</sup> paragraph. It is noted that the corresponding structure disclosed in the specification is the bolts used to tighten the backplate on the plate.

Claim 23, lines 1-2, "back-plate positioning means" does invoke 112, 6<sup>th</sup> paragraph. It is noted that the corresponding structure disclosed in the specification is the bolts used to tighten the backplate on the plate.\*/--/

Claim 23, line 2, "means to tighten" does invoke 112, 6<sup>th</sup> paragraph. It is noted that the corresponding structure disclosed in the specification is the bolts used to tighten the backplate on the plate.

***Claim Rejections - 35 USC § 102***

17. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

18. Claims 15-23 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 10013007 Murata et al, also published as US 6.660,944 Murata et al, which is used for citations below.

As to Claim 15, the intended use of reshaping a set of conductive elements does not further limit the scope of an apparatus claim as explained in MPEP 2111.02 [R-3]. Additionally, the material worked upon (conductive elements) and the manner in which the apparatus cooperates with the conductive elements (to enable stress release between at least some of the conductive elements) does not further limit the scope of an apparatus claim as explained in MPEP 2115.

However, Murata teaches a device for reshaping a set of conductive elements on the bottom of an electronic module that can transfer the module onto a motherboard, that allows for stress reflow, and therefore stress release, in a volume with walls of predetermined shapes, with tops of elements that fit a predetermined two-dimensional or three-dimensional envelope. This is taught in column 3, lines 5-10, lines 43-45 and 58-62 and column 13, lines 18-23 and figure 3. Even though Murata does not explicitly teach the transfer of the module onto a motherboard, the solder balls on the device would be capable of said transfer.

Regarding claim 16, Murata teaches a plane wall and a leveling jig in contact with the solder balls in column 13, lines 18-23 and figure 2A.

Regarding claim 17, Murata teaches a second plane wall in contact with the substrate in column 15, lines 8-11 and figure 3.

Regarding claims 18 and 19, the stress reflow means comprises a plate, a back-plate, a furnace and a cooling means in column 13, lines 18-23, column 14, lines 59-63 and column 14, line 66 to column 15 line 1 and column 15, lines 8-11 of Murata. Murata does not explicitly teach a means to release. However, the removal of the upper plate **39** is taught in column 15, lines 34-35, after which the module would no doubt be removed. Additionally, the removal of the module is an intrinsic aspect of the invention because if the module is placed and secured in between a plate and a back plate, there must be a method of removing the module as well, even if Murata had not mentioned the removal of upper plate **39**.

Regarding claims 20 and 21, the claims are drawn to the specifics of the material worked upon and therefore are not given patentable weight. Please refer to section 2115 of the MPEP. However, Murata teaches a substrate that is capable of being deformed once a sufficient temperature has been reached in column 15, lines 31-37. Murata also teaches a substrate with a connector in the form of a solder ball that undergoes stress release by melting in column 3, lines 5-10

Regarding claim 22, Murata teaches a housing in which the module is placed in column 14, line 66 to column 15 line 1 and in column 15, lines 8-11.

Regarding claim 23, Murata teaches a means to secure the back plate against the plate by using an upper pressing plate **39** in column 15, lines 8-11 to provide pressure to the assembly. It is the Examiner's position that the tightening means of Murata performs the claimed function in substantially the same way and produces substantially the same result as the corresponding

element disclosed in the specification. This pressing plate would optimize the stress application on the module.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MEGHA MEHTA whose telephone number is (571)270-3598. The examiner can normally be reached on Monday to Friday 7:30 am to 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on 571-272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Megha Mehta/  
Examiner, Art Unit 1793

/Jessica L. Ward/  
Supervisory Patent Examiner, Art Unit  
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